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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/352,976	07/14/1999	MICHAEL D. GILBERT	00169-027001	2851

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FISH & RICHARDSON PC  
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BOSTON, MA 02110

EXAMINER

CHANG, VICTOR S

ART UNIT	PAPER NUMBER
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1771

DATE MAILED: 03/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/352,976

Applicant(s)

GILBERT, MICHAEL D.

Examiner

Victor S Chang

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 24 January 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1,4-6,8,9,14-26,28-30,32 and 66-77 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,4-6,8,9,14-26,28-30,32 and 66-77 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Introduction***

1. The Examiner has carefully considered Applicants' amendments and remarks filed on 1/24/2005. Applicants' amendments to the specification, claims 1, 4, 5, 8, 16, 19, 30, 66, and new claims 68-77 have been entered.
2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
3. Rejections not maintained are withdrawn.

### ***Claim Objections***

4. New claim 68 is objected to because of the following informalities:  
Please correct the typo at the last line, i.e., change "disband" to --disbond--.  
Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

5. New claims 68-77 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

It is noted that the newly added independent claim 68 lacks structural relationship between "a second electronically conducting surface" and other structural elements. Clarification is requested.

***Claim Rejections - 35 USC § 102***

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1, 5, 6, 8, 9, 14-22, 25, 28-30 and 32 are rejected under 35 U.S.C. 102(b) as being anticipated by Moulton et al. (US 5441830), and evidenced by Koga (US 5565284), generally as set forth in section 4 of Office action dated 7/22/2004, together with the following additional reasoning.

First, it is noted that independent claim 1 has been amended, and its scope is substantially broadened to recite “An electrochemically disbondable composition, comprising: a polymer; and an electrolyte, wherein the electrolyte provides sufficient ionic conductivity to said composition to enable a faradaic reaction at a bond formed between the composition and an electrically conductive surface and allow the composition to disbond from said surface.”

Second, the Examiner repeats the teachings of Moulton as follows: Moulton’s invention is directed to methods for enhancing the adhesion of composite electrodes onto conductive plastic foils (Abstract). Typically, the “composite electrode” contains a polymer, which acts to bind the composite materials together, and an electrolytic solvent (electrolyte). For example, a composite cathode can comprise a compatible cathodic material, a conductive material, an electrolytic solvent, an alkali salt, a solid matrix

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forming polymer (column 8, lines 10-21), film forming agents such as polyethylene oxide, polypropylene oxide, etc. (column 12, lines 26-40). Suitable electrolytic solvents include propylene carbonate, ethylene carbonate, etc. (column 7, lines 33-34).

For claims 1, 8 and 9, the Examiner repeats (see Office action dated 7/22/2004) that Moulton's composite electrode, electrolyte solvent, and matrix forming polymer read on the instantly claimed disbondable composition, electrolyte functionality, and matrix functionality, respectively. Although Moulton lacks an express teaching that the composite electrode is electrically disbondable by a faradaic reaction at bonding interface, the Examiner notes that Moulton's teaching of methods for enhancing the adhesion of composite electrodes onto conductive foils implicitly teaches that while the bond can be enhanced, eventually it can be disbonded, i.e., disbondable. Additionally, while Moulton is silent about the mechanism of disbonding, the Examiner repeats (see Office action dated 2/28/2003, page 5) that it is old and well known that the bond between a composite electrode and an electrically conductive surface is weakened by a faradaic reaction at the interface, as evidenced by the teaching of Koga (US 5565284) which expressly teaches that charge-discharge cycles exacerbates the interfacial adhesion (bond) between the current collector and the electrode layer (column 1, lines 39-52).

For claims 5 and 6, the Examiner repeats that Moulton expressly teaches that the cathode paste can optionally contain film forming agents such as polypropylene oxide, which inherently contains alkoxy moieties as claimed (column 12, lines 36-44).

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For claim 14, Moulton expressly teaches that suitable electrolytic solvents include propylene carbonate, ethylene carbonate, etc., as set forth above.

For claims 15 and 16, the Examiner repeats that Moulton teaches that suitable cathode prepolymers are alkali or alkaline earth metal ion conducting, such as urethane acrylates, vinyl sulfonate polyalkylene oxides, etc. (column 12, lines 26-35). It is noted that vinyl sulfonate polyalkylene oxides inherently comprises non-polar components (polyalkylene oxides backbone) and ionic conductive components (vinyl sulfonate segment).

For claims 17-22, the Examiner repeats that Moulton teaches in Example 7 that the cathode powder is prepared by combining  $V_6O_{13}$  and carbon powder, and  $V_6O_{13}$  is prepared by heating ammonium metavanadate ( $NH_4^+VO_3^-$ ), i.e., an ammonium salt, (column 18, lines 57-61). Further, the well-known in the art statement in the prior Office action (see Office action dated 2/28/2003, page 5; and Office action dated 7/22/2004, page 5) is taken to be admitted prior art because Applicant either failed to traverse the Examiner's assertion of official notice or that the traverse was inadequate.

For claim 25, the Examiner repeats that Moulton teaches in Example 7 that inhibitor is included in the preparation of cathode paste (column 19, line 32-33).

For claims 26 and 28, the Examiner repeats that Moulton teaches that his composite electrode materials have improved adhesion onto conductive foils, as set forth above. In other words. Moulton's composite electrode materials are inherently adhesives toward the conductive foils surface, on which the composite electrode materials are applied (coated) onto.

For claim 29, Moulton's teaching of enhanced adhesion of the composite electrode materials to the conductive foil inherently reads on the instantly claimed property of being resistant to delamination.

For new claim 68, the Examiner notes that Moulton's composite electrode and conducting foil are inherently connected to separate conducting poles (a positive pole and a negative pole) through surface contacts.

For new claims 69-77, since the scope of the instantly claimed elements are essentially of the same as the preceding claims, they are also rejected as set forth above.

8. Claims 4, 23, 24, 66 and 67 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Moulton et al. (US 5441830), and evidenced by Koga (US 5565284), generally as set forth in section 4 of Office action dated 7/22/2004, together with the following additional reasoning.

The teachings of Moulton are again relied upon as set forth above.

For claim 4, the Examiner repeats that Moulton expressly teaches that conventional curing or crosslinking is used for forming a solid electrode (column 13, lines 29-38). Although Moulton is silent about the crosslinking density and mechanical strength in different regions, since Moulton teaches substantially the same subject matter, as set forth above, it is the Examiner's position that suitable crosslinking density and mechanical strengths in different regions are either anticipated, or obviously provided once the product is made.

For claims 23, 24 and 66, the Examiner repeats that although Moulton is silent about the ionic conductivity of the electrode conductivity, the examiner notes that since Moulton teaches substantially the same invention, a suitable ionic conductivity is believed to be either anticipated, or an obvious optimization to one skilled in the art of electrodes, motivated by the desire to obtain a required amount of electrical current.

For claims 30, 32 and 67, the Examiner repeats that although Moulton lacks an express teaching that the adhesive bond has a shear strength greater than 200 psi, it the Examiner's position that since Moulton teaches substantially the same subject matter, as set forth above, and also teaches methods for enhancing the adhesion of composite electrode materials onto conductive foils, a suitable shear adhesion strength is either anticipated by Moulton, or obviously provided, once the product is made.

### ***Response to Argument***

9. With respect to Applicant's argument "The Examiner appears to be combining Moulton's discussion related to the adhesive with the composite electrodes referenced in Moulton." (Remarks, page 9, last full paragraph), the Examiner notes that the relied upon elements are Moulton's teachings relating to the composite electrode materials, which appears to read upon the instant electrochemically disbondable composition in claim 1, as set forth above, the Examiner has not pointed to any Moulton's discussion regarding adhesion promoter or adhesive as grounds of rejection, Applicant's argument to the contrary notwithstanding.



With respect to Applicant's argument "In considering Moulton's teachings, it is important to remember that an electrically or electronically conducting layer, whether adhesive or not, cannot support a faradaic reaction across its interface with another electrically or electronically conducting surface (such as plastic foil), because such an interface cannot support the potential gradient necessary for a faradaic reaction." (Remarks, page 9, last full paragraph), the Examiner notes that since Moulton's composite electrode materials read upon the instant invention as claimed, in the absence of evidence to the contrary, it is the Examiner's position that its electrochemical reaction, such as faradaic reaction across its interface with another electrically or electronically conducting surface, are also anticipated. It should be noted that, in the absence of factual support, Attorney's argument cannot take place of evidence.

With respect to Applicant's argument "All of the teachings, examples, and discussion in Moulton deal with interfaces between electronically conducting layers which cannot support faradaic reactions. For example, Moulton clearly points out that "since this adhesion-layer is electrically conducting, the current generated by the electrochemical cell can pass through it and be collected by the conductive plastic foil acting as the current collector." (Remarks, page 9, last full paragraph), the Examiner notes that Applicant fails to provide any evidentiary support to explain why Moulton's electrically conductive composite electrode cannot support faradaic reaction. The Examiner repeats that, in the absence of factual support, Attorney's argument cannot take place of evidence. Further, the Examiner notes that merely pointing out that Moulton's composite electrode is electrically conductive appears to be irrelevant to

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whether it can support a faradaic reaction, particularly it is noted that the instant invention actually requires ionic conductivity (i.e., electrical conductivity) for its faradaic reaction (specification, page 12).

### ***Conclusion***

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Victor S Chang whose telephone number is 571-272-1474. The examiner can normally be reached on 8:30 - 5:00.


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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Terrel H Morris can be reached on 571-272-1478. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Victor S Chang  
Examiner  
Art Unit 1771

3/10/2005



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